

## **Case studies and solutions**

### **Case 1 :-**

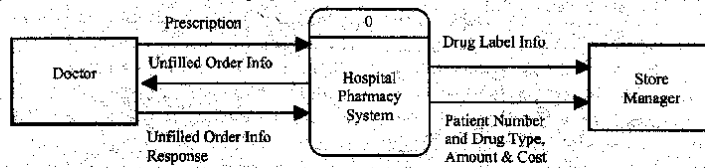
Develop a context diagram and level 0 diagram for the hospital pharmacy system described in the following narrative.

The pharmacy at Mercy Hospital fills medical prescriptions for all patients and distributes these medications to the nurse stations responsible for the patient's care. Medical prescriptions are written by doctors and sent to the pharmacy. A pharmacy technician reviews the prescriptions and sends them to the appropriate pharmacy station. Prescriptions for drugs that must be formulated (made on site) are sent to the lab stations, prescriptions for off the shelf drugs are sent to the shelving station, and prescription for narcotics are sent to the secure station.

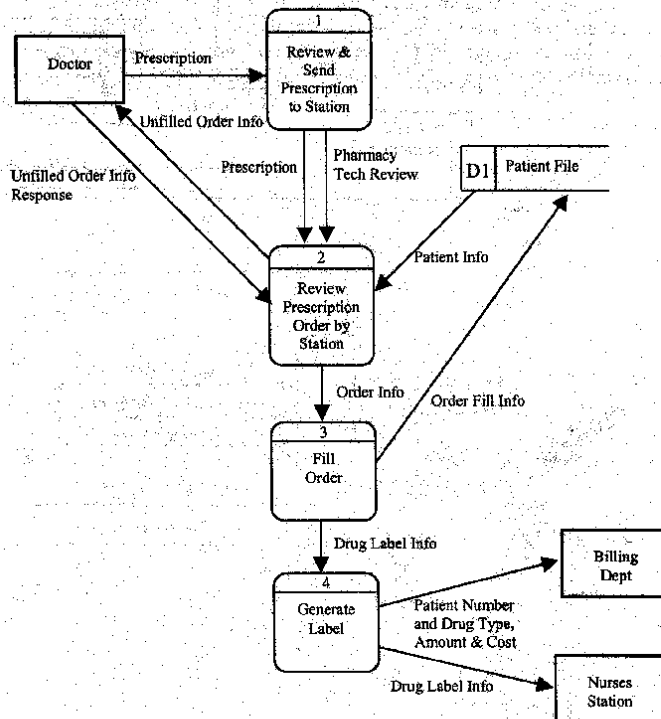
At each station, a pharmacist reviews the order, check the patient's file to determine the appropriateness of the prescriptions, and fills the order if the dosage is at a safe level and is will not negatively interact with the other medications or allergies indicated in the patient's file. If the pharmacist does not fill the order, the prescribing doctor is contacted to discuss the situation. In this case, the order may ultimately be filled or the doctor may write another prescription depending on the outcome of the discussion. Once filled, a prescription label is generated listing the patient's name, the drug type, and dosage, an expiration date, and any special instructions. The label is placed on the drug container and the orders are sent to the appropriate nurse stations. The patients admission number, the drug type and amount dispensed, and the cost of the prescription are then sent to the billing department.

14. A suggested answer is provided below.

**Context Diagram**



**Level-0 Diagram**



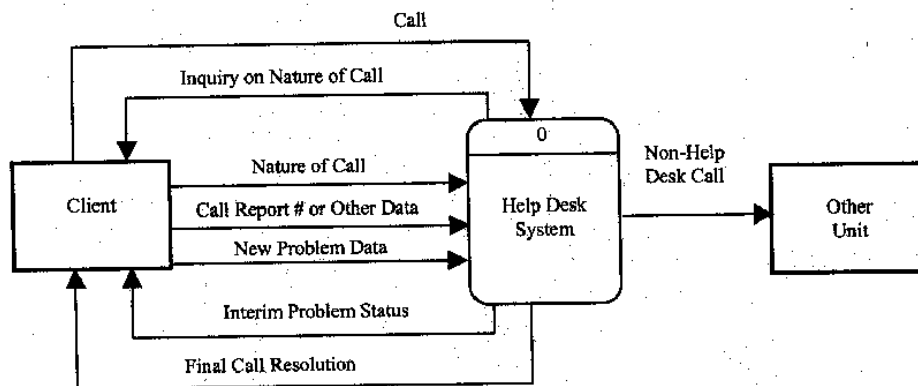
**Case 2 :-**

Maximum Software is a developer and supplier of software products to individuals and businesses. As part of their operations, Maximum provides an 800 telephone number help desk for clients who have questions about software purchased from Maximum. When a call comes in, an operator inquires about the nature of the call. For calls that are not truly help desk functions, the operator redirects the call to another unit of the company such as Order Processing or Billing. Since many customers questions require in-depth knowledge of a product, help desk consultants are organized by product.

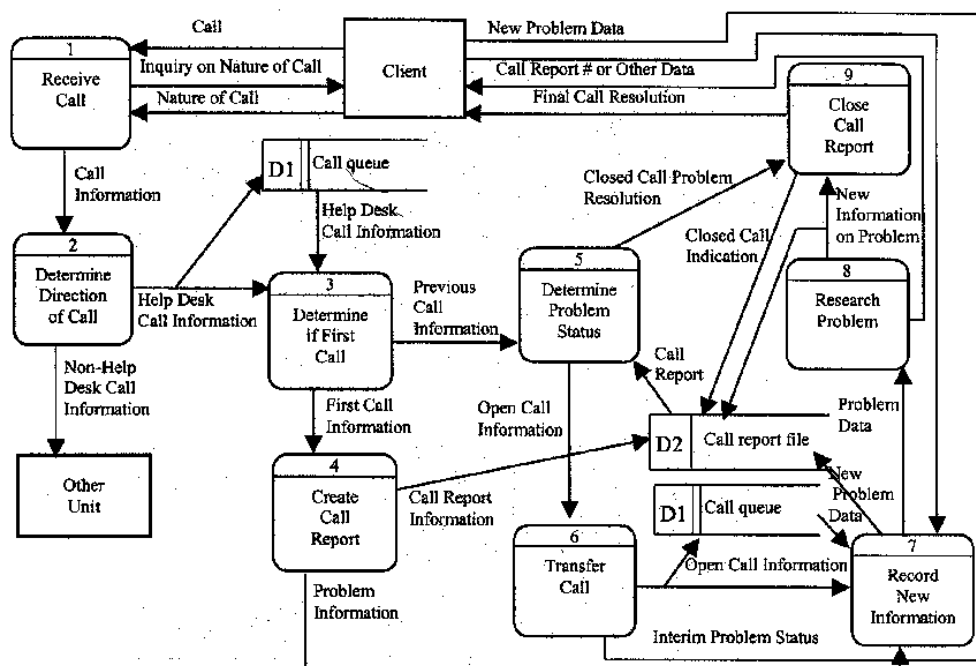
The operator directs the call to a consultant skilled on the software that the caller needs help with. Since a consultant is not always immediately available, some calls must be put into a queue for the next available consultant. Once a consultant answers the call, he determines if this is the first call from this customer about this problem. If so, he creates a new call report to keep track of all the information about the problem. If not, he asks the customer for a call report number and retrieves the open call report to determine the status of the inquiry. If the caller does not know the call report number, the consultant collects other identifying information such as the caller's

name, the software involved, or the name of the consultant who has handled the previous calls on the problem in order to conduct a search for the appropriate call report.

### Context Diagram



### Level-0 Diagram



## Case 3

### ■ Introduction

#### ■ Company description

Warm Boot Manufacturing(WBM) buys supplies such as leather and shoelaces from its vendors in order to manufacture its award-winning, best-selling downhill and cross-country ski boots. The Director of Accounts Payable has requested to develop a computer system to manage its accounts payable system.

#### Business process description

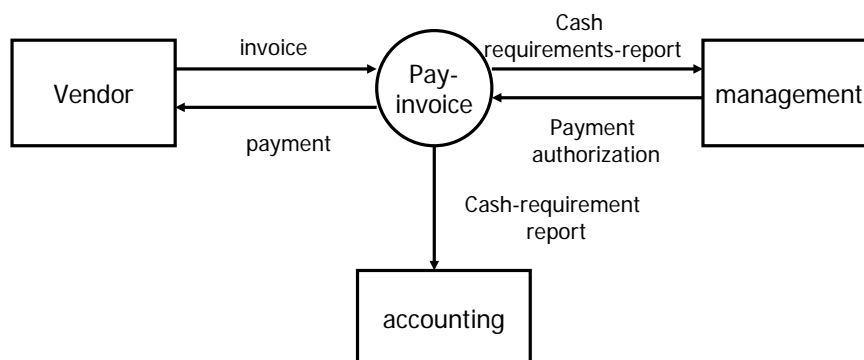
An invoice from a Vendor triggers the pay invoices function. The information on the invoices is compared with the corresponding purchase order and packing slip information in the purchase file. First, a purchase order and packing slip information in the purchase order number listed on the vendor's invoice, and there must be at least one packing slip recorded for it. Next, the quantity of each item listed on the invoice is checked against the quantity on the quoted price on the purchase order. If the invoice passes all of these tests, it is stored in the pending invoices file to await payment. If an invoice fails any test, it is rejected.

- Before a valid invoice can be paid, authorization must be obtained. All invoices with total amounts under \$100 are immediately authorized for payment. If an invoice total is between \$100 and \$1,000, inclusive, and (a) the invoice has an early payment discount or (b) the invoice is more than 10 days old, it is authorized for payment. Invoices in this amount range that do not meet either of the criteria are rejected and tried again the next time.
- For invoices greater than \$1,000, a cash requirements report is produced and delivered to management. Management must then send back to accounts payable a payment authorization listing which invoices to pay immediately.
- Payment checks are issued for all valid authorized invoices. Since the person doing the authorization will, on rare occasions, make a mistake, the authorized invoice number must be verified against the valid invoice numbers in the pending invoices file. All invoices are paid in full; that is , no partial payment occur.
- After an invoice is paid, the matching pending invoice record is detected and the entire purchase order record is "retired"; that is, the payment information is entered on the existing purchase order record and that record is rewritten to the file. The record id not deleted.
- Company policy is to use an Oracle database due to licensing agreements.

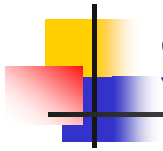
[Paraphrased Kendall 1996]

## Context diagram - Exercise

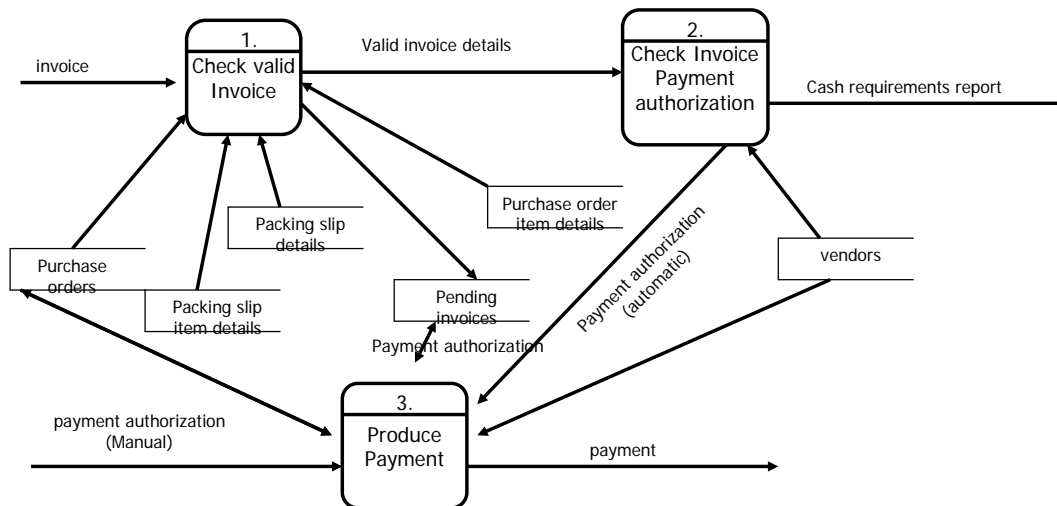
### ■ System context diagram



[Kendall 1996]



# Data Flow Diagram-level 0 Solution



[Kendall 1996]